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AGILENT TECHNOLOGIES, INC.  
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EXAMINER

TORRES, JOSEPH D

ART UNIT PAPER NUMBER

2133

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/020,605

Applicant(s)

AMRUTUR ET AL.

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 34-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 34-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-10 and 34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

2. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 substantially recites elements that are already in claim 1.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5 and 34-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "said scrambled data" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 34 recites, "**said received bit stream** being without redundant bits **and without being encoded prior to being scrambled**". Claim 35 recites, "**a data bit stream having no previous encoding**". Claim 36 recites, "**data bits and other-bits that have not been previously encoded**". Claim 37 recites, "**an unencoded received bit stream**". The received data bit stream must be a stream of ones and zeros since the taught scrambling and ECC encoding is for binary or digital data. As such they are either a representation of some other source data encoded into digital format otherwise they are random useless strings of ones and zeros. The statement "**without being encoded prior to being scrambled**" does not make sense.

Until further clarification, the Examiner is assuming the received bit stream is at least source encoded to arrange meaningful information or data into a digital representation.

#### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 34-37 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. Claim 34 recites, "**said received bit stream** being without redundant bits **and without being encoded prior to being scrambled**". Claim 35 recites, "**a data bit stream having no previous encoding**". Claim 36 recites, "**data bits and other-bits that have not been previously encoded**". Claim 37 recites, "**an unencoded received bit stream**". The received data bit stream must be a stream of ones and zeros since the taught scrambling and ECC encoding is for binary or digital

data. If the received bit stream is not a representation of some other source data encoded into digital format otherwise they are random useless strings of ones and zeros.

Until further clarification, the Examiner is assuming the received bit stream is at least source encoded to arrange meaningful information or data into a digital representation.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 5, 34, 35 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumar; Derek D. (US 5825807 A).

35 U.S.C. 102(b) rejection of claims 1, 5, 34, 35 and 37.

Kumar teaches a scrambler device for receiving a bit stream (Scrambler 102 in Figure 9 of Kumar), the scrambler device scrambles groups of data in the data bit stream to statistically balance the number of logic low and logic high bits in the groups of data (a message is a group of data bits in a data bit stream: Note: Figure 9 in Kumar teaches that data is scrambled one message at a time; Note also that one of ordinary skill in the art at the time the invention was made would have recognized that the Device in Figure 9 of Kumar is a device for encoding a bit stream of data in message blocks since any

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useful system transmits many more bits than what can be stored in the transmission ECC message block of Figure 14 in Kumar comprising a source message having K=306 source message bits; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data); and an ECC encoder device that receives the scrambled groups of data from the Scrambler device and converts said scrambled groups of data into ECC-encoded data (ECC Encoder 38 in Figure 9 of Kumar receives the scrambled source message group of data having K=306 source message bits from the Scrambler device and converts said scrambled groups of data into ECC-encoded data).

6. Claims 6-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam).

35 U.S.C. 102(e) rejection of claims 6.

Adam teaches a scrambler for converting original received data into scrambled data (data bits D1, D2 and D3 and other bits K1', K2', and K3' in step 304 of Figure 3 of Adam are received data at a scrambler device; col. 4, lines 51-59 in Adam teach that received data data bits D1, D2 and D3 and other bits K1', K2', and K3' in Step 304 of Figure 3 are received by the scrambler which outputs SD1, SD2 and SD3 and SK1', SK2' and SK3' in Step 306; Adam explicitly teaches that SD1, SD2 and SD3 and SK1',

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SK2' and SK3' in Step 306 are scrambled versions of received data D1, D2 and D3 and other bits K1', K2', and K3' in Step 304 of Figure 3); and an ECC encoder for converting said scrambled data into ECC-encoded data, said scrambled data having a statistical balance between the number of logic low and logic high bits in the groups of data (scrambled received data SD1, SD2 and SD3 and other bits K1', K2', and K3' are FEC encoded to convert received data SD1, SD2 & SD3, scramble encoded control bits SK1', SK2' & SK3' and synchronization bits SS into ECC-encoded data; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data).

35 U.S.C. 102(e) rejection of claims 7 and 8.

Adam teaches Serializer 108 in Figure 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in

Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 2 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) in view of Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam).

35 U.S.C. 103(a) rejection of claim 2.

Kumar substantially teaches the claimed invention described in claim 1 (as rejected above).



However Kumar does not explicitly teach the specific use of a serializer nor the frame alignment details required in any system for synchronization.

Adam, in an analogous art, teaches Serializer 108 in Figure 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Adam by including use of a serializer. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a serializer would have provided a means for communicating on a serial link.

35 U.S.C. 103(a) rejection of claim 36.

Kumar teaches a scrambler device for receiving a bit stream (Scrambler 102 in Figure 9 of Kumar), the scrambler device scrambles groups of data in the data bit stream to statistically balance the number of logic low and logic high bits in the groups of data (a message is a group of data bits in a data bit stream: Note: Figure 9 in Kumar teaches that data is scrambled one message at a time; Note also that one of ordinary skill in the art at the time the invention was made would have recognized that the Device in Figure 9 of Kumar is a device for encoding a bit stream of data in message blocks since any useful system transmits many more bits than what can be stored in the transmission ECC message block of Figure 14 in Kumar comprising a source message having  $K=306$  source message bits; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data); and an ECC encoder device that receives the scrambled groups of data from the Scrambler device and converts said scrambled groups of data into ECC-encoded data (ECC Encoder 38 in Figure 9 of Kumar receives the scrambled source message group of data having  $K=306$  source message bits from the Scrambler device and converts said scrambled groups of data into ECC-encoded data).

However Kumar does not explicitly teach the specific use of other bits.

Adam, in an analogous art, teaches use of other bits ( $K1'$ ,  $K2'$ , and  $K3'$  in Step 304 of Figure 3 are).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Adam by including use of other bits. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of other bits would have provided error protection for control bits as well as data bits.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) and Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) in view of Kimmitt; Myles (US 6738935 B1).

35 U.S.C. 103(a) rejection of claims 3.

Kumar and Adam substantially teaches the claimed invention described in claims 1 and 2 (as rejected above). In addition, Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam

comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Kumar and Adam does not explicitly teach the specific use of error indications. Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar and Adam with the teachings of Kimmitt by including use of error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 4.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) in view of Kimmitt; Myles (US 6738935 B1).

35 U.S.C. 103(a) rejection of claim 9.

Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Adam does not explicitly teach the specific use of error indications.

Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Adam with the teachings of Kimmitt by including use of

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error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 10.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

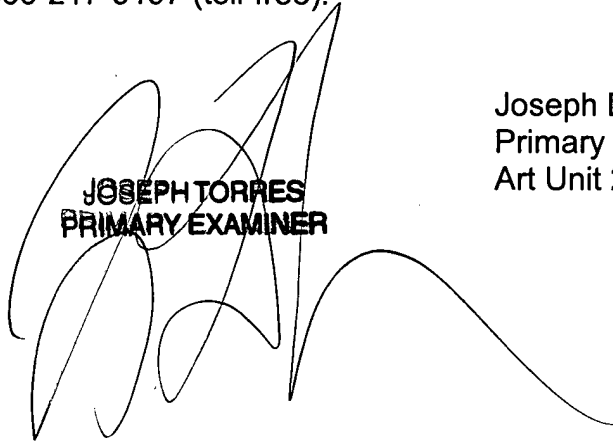
### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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A large, stylized handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

Joseph D. Torres, PhD  
Primary Examiner  
Art Unit 2133

**JOSEPH TORRES**  
**PRIMARY EXAMINER**